



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1

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BOSTON, MASSACHUSETTS 02114-2023

January 30, 2001

Harry T Stewart, P.E., Director
New Hampshire Department of Environmental Services
Water Division
6 Hazen Drive, Box 95
Concord, New Hampshire 03302-0095

RECEIVED

FEB - 5 2001

DEPARTMENT OF
ENVIRONMENTAL SERVICES

SUBJECT: Notification of Approval of Lamprey River TMDL

Dear Mr. Stewart:

Thank you for your submittal of a Total Maximum Daily Load (TMDL) for the Lamprey River, NH. The final TMDL includes the following documents:

- (1) Letter to Fred Gay (EPA) from Gregg Comstock (NHDES) dated July 2, 1998, which constitutes a resubmission of the TMDL. This letter provides revised wasteload allocations (WLAs) for the Epping POTW, based on a rerun of the dissolved oxygen model during dry-weather (critical) conditions. This rerun was performed as requested by EPA to include the most recent NH water-quality standards for DO, a POTW design flow of 0.5 million gallons per day (MGD), and limits for year-round discharge.
- (2) Letter to Mark Voorhees (EPA) from James Herrick (NHDES) dated March 7, 1996, which includes EPA comments on the 1995 TMDL report and NHDES responses to these comments.
- (3) Lamprey River TMDL Study Report dated October 1995.
- (4) Lamprey River Wasteload Allocation Study by Dufresne-Henry, Inc., dated April 1995.

The Lamprey River in the vicinity of the Epping Publicly Owned Treatment Works (POTW) was included on New Hampshire's 1998 303(d) list because of water-quality impairment due to insufficient dissolved oxygen (DO). This section of the river at and downstream of the POTW has a Wild and Scenic River designation.

This TMDL was developed for carbonaceous biochemical oxygen demand (CBOD₅), ammonia nitrogen (NH₃-N) for both summer and winter seasons, and phosphorus. Approval of this TMDL fulfills New Hampshire's obligation for TMDL development for the Lamprey River (File # 48 on Tier 2 of New Hampshire's 1998 303(d) list).

The U.S. Environmental Protection Agency (EPA) has determined that the Lamprey River TMDL meets the requirements 303(d) of the Clean Water Act (CWA), and of EPA's

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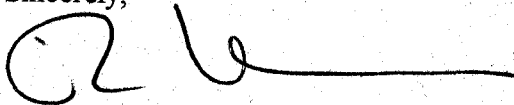
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implementing regulations (40 CFR Part 130). The submittal from New Hampshire includes all of the required elements of a TMDL, including: loading capacity, wasteload allocations, load allocations, seasonal variation, margin of safety, and public-participation process. The submittal also includes other pertinent information necessary for EPA to conduct its review, including: submittal letter, description of pollutant sources, applicable state water-quality standards, analytical method used and documentation of analysis, and future monitoring plans.

The public notice for the National Pollutant Discharge Elimination System (NPDES) permit for the Epping POTW also served as the public notice for the TMDL. NHDES (and EPA New England) solicited public comments from October 18, 1999 through December 1, 1999 for this permit and draft TMDL, with a public hearing on the evening of December 1, 1999. As a result of this hearing, the public-comment period was extended through December 8, 1999. No comments were received during this period on the TMDL document, but some were received on the NPDES permit. In addition to this opportunity for public comments, NHDES provided adequate opportunity for public involvement during the development of the Lamprey River TMDL. For example, the Lamprey River Watershed Association provided extensive input prior to the TMDL going to public notice.

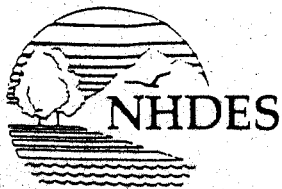
My staff and I look forward to continued support from the State of New Hampshire in the implementation of this TMDL through the NPDES permit for Epping's POTW.

Sincerely,



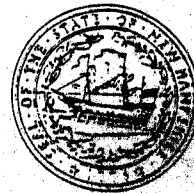
LM Linda M. Murphy, Director
Office of Ecosystem Protection

cc: Paul Currier, NH DES
Gregg Comstock, NH DES
Ronald Manfredonia, EPA
Roger Janson, EPA
Carl De Loi, EPA
Alison Simcox, EPA
Fred Gay, EPA



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

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Mailed 7/2/98

July 2, 1998

Mr. Fred Gay
USEPA Region I
1 Congress Street - CNH
Boston, MA 02203

Subject: Epping WWTF - Permit limits for 0.5 MGD

Fred
Dear Mr. Gay:

As requested, we have rerun the dissolved oxygen model for the Epping WWTF based on a new design flow of 0.5 MGD. Recommended limits for effluent Dissolved Oxygen (DO), CBOD5, NH3-N and phosphorus (P) are shown on the attached table. Copies of model runs are also enclosed. Model input was based on the model runs and results transmitted to you on January 8, 1997 with the exception of the WWTF flow which was increased from 0.35 MGD to 0.5 MGD. For convenience, model assumptions are presented after the table.

Should you have any questions, please do not hesitate to call.

Cordially,

Gregg Comstock, P.E.

cc: Paul Currier
George Berlandi
Jake Parent

Preliminary Effluent Limits for the Epping WWTF
6-24-98

Parameter	Concentration (mg/l)			Mass (#/day)		
	Ave. Month	Ave. Week	Max. Day	Ave. Month	Ave. Week	Max. Day
	Summer Limits (June 1 through October 31) Epping WWTF = 0.5 MGD					
Flow Limitations	No discharge when the river flow is less than 6 cfs (2 x 7Q10)					
Effluent DO	No less	than	7.0 mg/l			
CBOD ₅	5	7	9	21	29	38
NH ₃ -N	3.7		5.6	15.4		23.4
Total P			0.52			2.2
	Winter Limits (November 1 through May 31) Epping WWTF = 0.5 MGD					
Effluent DO	No less	than	7.0 mg/l			
CBOD ₅	5	8	33	21	33	138
NH ₃ -N	8.7		13.1	36.3		54.6
Total P			0.52			2.2

Notes:

1. Shaded values are based on the DO model. The Total P concentration was determined by holding the TP loading (2.2 lbs /day) based on 0.35 MGD (see letter of January 8, 1997 from DES to Mr. Fred Gay) and dividing by the conversion factor of 8.34 and the increased design flow of 0.5 MGD.
2. Other combinations of CBOD₅ and NH₃-N are possible. For winter conditions, it was assumed that the community would want a high NH₃-N limit to reduce nitrification costs; consequently, the average monthly winter CBOD₅ limit was held at the average monthly summer CBOD₅ limit of 5 mg/L.
3. Not all permit limits are shown. The final permit will include limits for other parameters such as E. Coli, chlorine, TSS, WET, etc. (Continued on next page)

4. Modeling Assumptions:

- a. The 1996 Surface Water Quality Regulations for DO and ammonia was used.
- b. River Flow: Per the 1995 TMDL study, a river flow of 2x7Q10 (6 cfs) was used in the summer and the 7Q10 river flow of 3 cfs was used for winter modeling.
- c. Upstream DO in the summer was based on hydrolab results upstream of the WWTF taken in August of 1995. The river flow at this time was approximately 2X 7Q10. For average monthly limits, the UPDO was equal to 84% sat (6.92 mg/L) and for determining max day limits the UPDO was set equal to 67% sat (5.52 mg/L). For winter modeling the UPDO was set equal to 10.16 mg/L which is what was used in the 1995 TMDL study.
- d. WWTF flow: 0.5 MGD = 0.77 cfs
- e. WWTF DO: 7.0 mg/L.
- f. Ka, Kd, Kn: Per the 1995 TMDL study, these were set at the following:

	Summer	Winter
Ka	1.5	1.0
Kd	1.0	0.5
Kn	1.0	0.29

- g. R: Per the 1995 TMDL study, this was set at 0.035.
- h. P: For determining average monthly limits, this was set at 0.2 based on chlor a levels. For determining max day limits, P was set equal to 0.
- i. SOD: Was set equal to 0 per the 1995 TMDL study.
- j. NH3-N: All NH3-N values are based on DO and not chronic toxicity. For comparison purposes, allowable NH3-N limits based on toxicity are shown below.

WWTF (MGD)	River (CFS)	Dil	Temp (Deg C)	Instream WQS		Effluent Limit	
				Chronic (mg/L)	Acute (mg/L)	Chronic (mg/L)	Acute (mg/L)
0.5	6.0	8.76	25	2.5	29	16.2	187
0.5	3.0	4.88	10	2.7*	31*	9.7*	111*

(* DES does not currently have a winter NH3-N standard.
The values shown are based on EPA's latest guidance).